Bonn zoological Bulletin 61 (2): 210–215 December 2012

The genus *Trisunius* in the Himalaya (Coleoptera: Staphylinidae: Paederinae: Medonina)

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Abstract. The genus *Trisunius* Assing, 2011 is reported from Nepal for the first time. Four species are (re-)described and illustrated: *T. perpusillus* (Coiffait, 1982), comb. n. (ex *Lathrobium* Gravenhorst, 1802), *T. alesi* sp. n. (northeastern Nepal), *T. opaciceps* sp. n. (central Nepal: Manaslu), and *T. manasluensis* sp. n. (central Nepal: Manaslu). Including these species, *Trisunius* is now represented in the Himalaya by five species and comprises a total of 14 species. A supplement to a recent key is provided. The distribution of the genus in the Himalaya is mapped.

Key words. Taxonomy, rove beetles, *Trisunius*, *Lathrobium*, Himalaya, Nepal, new species, new combination, key to species

INTRODUCTION

The recently described medonine genus *Trisunius* previously comprised ten species. Its known distribution ranges from the Himalaya, where it was represented only by *T. monticola* (Cameron, 1932) from Uttaranchal, to eastern China and Thailand. Eight of the ten species have been recorded only from the Chinese province Yunnan. A catalogue and a key to species are provided by Assing (2011).

A taxonomic revision of Himalayan *Lathrobium* Gravenhorst (Assing 2012) revealed that one of the species, *L. perpusillum* Coiffait, 1982, in fact belongs to *Trisunius*. A second, undescribed species was discovered among unidentified *Lathrobium* material from Nepal, and two additional species, both of them undescribed, were found in Paederinae material from Nepal deposited in the Naturkundemuseum Erfurt. These findings suggest that *Trisunius* is widespread in the Himalaya and that the genus is probably represented in this regions by numerous additional species that remain to be discovered.

For a redescription and illustrations of *T. monticola* see Assing (2011).

MATERIAL AND METHODS

The morphological studies were conducted using a Stemi SV 11 microscope (Zeiss Germany) and a Jenalab compound microscope (Carl Zeiss Jena). A digital camera (Nikon Coolpix 995) was used for the photographs.

Head length was measured from the anterior margin of the frons to the posterior margin of the head, elytral length at the suture from the apex of the scutellum to the posterior margin of the elytra, and the length of the aedeagus from the apex of the ventral process to the base of the aedeagal capsule. The "parameral" side (i.e., the side where the sperm duct enters) is referred to as the ventral, the opposite side as the dorsal aspect.

The map was created using MapCreator 2.0 (primap) software.

COLLECTION MATERIAL DEPOSITORIES

MNHNP Muséum national d'Histoire naturelle, Paris, France (A. Taghavian)
NME Naturkundemuseum Erfurt, Germany (M. Hartmann, assisted by W. Apfel)
cAss author´s private collection

RESULTS

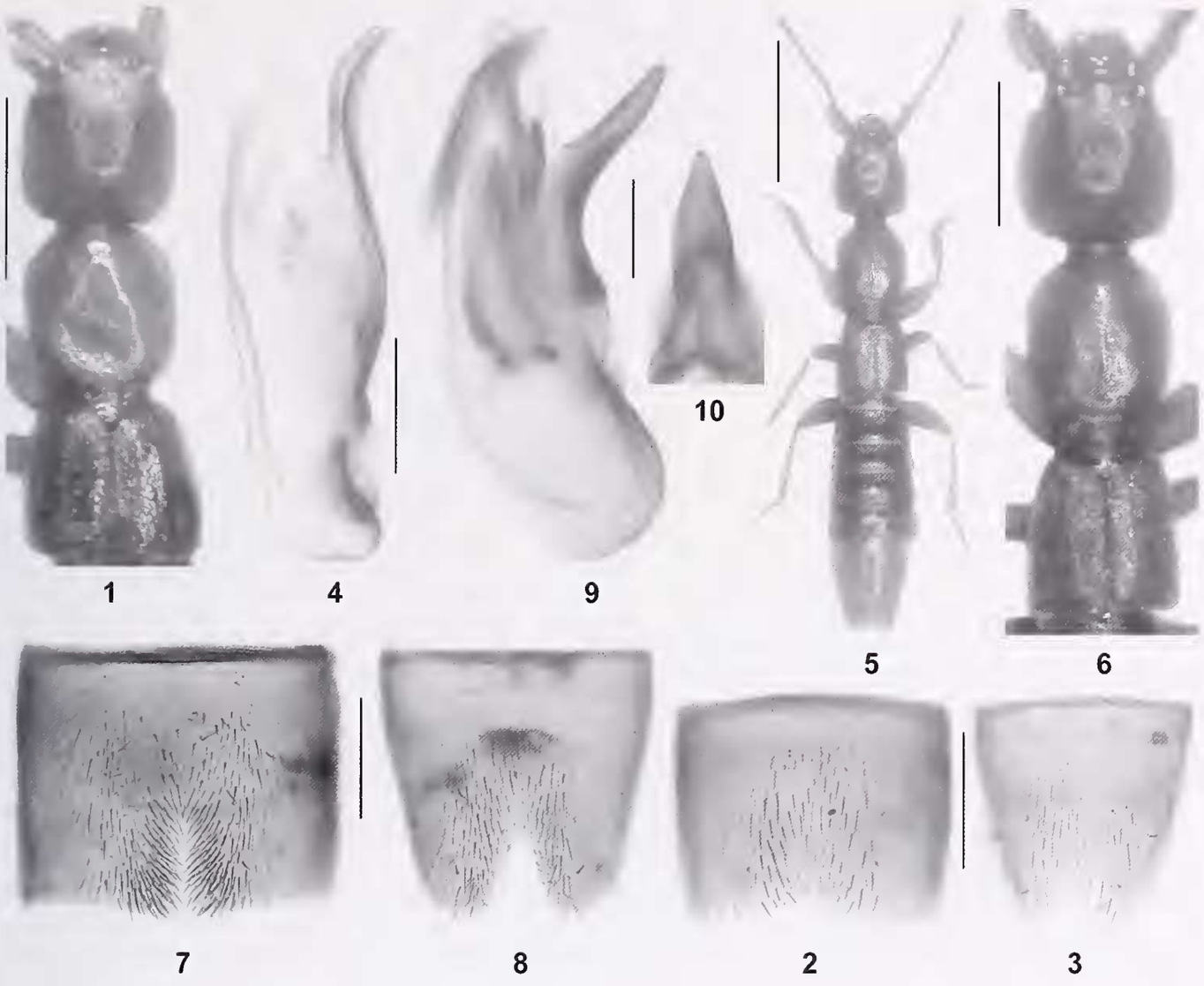
***Trisunius perpusillus* (Coiffait, 1982), comb. n.** (Figs 1–4, 21)

Lathrobium perpusillum Coiffait, 1982: 289 f.

Type material examined. Holotype ♂: "Nepal X.81, Kalingchok, 3100 m P.C / Holotype / Lathrobium perpusillum H. Coiffait 1982 / Trisunius perpusillus (Coiffait), det. V. Assing 2011" (MNHNP).

Comment. The original description is based on a unique male holotype from "Népal, Massif du Kalingchok, près

Received: 14.04.2012
Accepted: 10.10.2012
Corresponding editor: D. Ahrens



Figs 1–10. *Trisunius perpusillus* (**1–4**) and *T. alesi* (**5–10**). **1, 6:** forebody; **2, 7:** male sternite VII; **3, 8:** male sternite VIII; **4, 9:** aedeagus in lateral view; **5:** habitus; **10:** ventral process of aedeagus in ventral view. Scale bars: 5: 1.0 mm; 1, 6: 0.5 mm; 2–3, 7–8: 0.2 mm; 4, 9–10: 0.1 mm.

de Barbabise [sic], 2370 m [sic]" (Coiffait 1982). An examination of the holotype revealed that this species does not belong to *Lathrobium*, but to *Trisunius*.

Redescription. Very small species, body length 2.8 mm; length of forebody 1.45 mm. Coloration: body uniformly reddish; legs and antennae yellowish.

Head (Fig. 1) oblong, almost 1.1 times as long as broad; punctation very fine, barely noticeable in the pronounced microreticulation, except for a macropuncture on either side in median dorsal portion. Anterior margin of labrum with two tooth-like projections on either side of the U-shaped median incision. Eyes not projecting from lateral contours of head, somewhat less than half as long as postocular region in dorsal view.

Pronotum (Fig. 1) approximately 1.05 times as long as broad and as broad as head; punctation dense and more distinct than that of head, interstices without distinct microsculpture, glossy.

Elytra short, approximately 0.7 times as long as pronotum (Fig. 1); humeral angles weakly marked; punctation fine and dense; interstices without distinct microsculpture. Hind wings completely reduced.

Abdomen broader than elytra; punctation very fine and dense, barely noticeable in the pronounced microsculpture; posterior margin of tergite VII without palisade fringe.

♂: protarsomeres I–IV moderately dilated; sternite VII moderately transverse, with broad and shallow posterior margin (Fig. 2); sternite VIII approximately as long as wide and with small V-shaped posterior excision (Fig. 3); aedeagus approximately 0.4 mm long, shaped as in Fig. 4.

♀: unknown.

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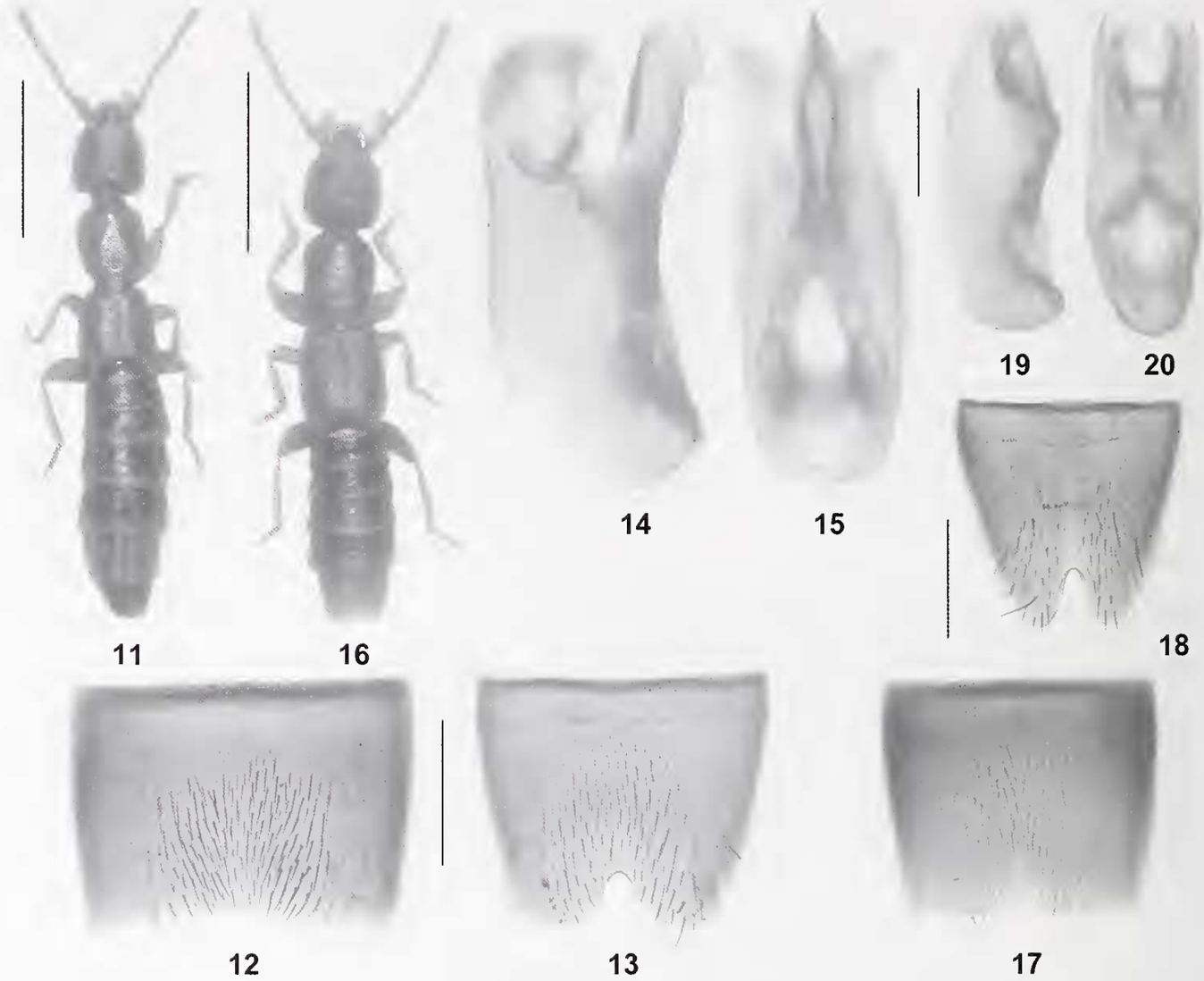

Figs 11–20. *Trisunius manasluensis* (**11–15**) and *T. opaciceps* (**16–20**). **11, 16:** habitus; **12, 17:** male sternite VII; **13, 18:** male sternite VIII; **14, 19:** aedeagus in lateral view; **15, 20:** aedeagus in ventral view. Scale bars: 11, 16: 1.0 mm; 12–13, 17–18: 0.2 mm; 14–15, 19–20: 0.1 mm.

Comparative notes. *Trisunius perpusillus* is distinguished from its congeners particularly by the morphology of the aedeagus. For additional characters distinguishing it from other Himalayan representatives of the genus see the key at the end of the article.

Distribution and natural history. The species is currently known only from the type locality, the Kalinchok, a mountain some 13 km to the east of Barahbise and almost 70 km to east-northeast of Kathmandu in eastern central Nepal (Fig. 21). According to the label attached to the holotype, the specimen was collected at an altitude of 3100 m.

***Trisunius alesi* sp. n.** (Figs 5–10, 21)

Type material. Holotype ♂: "Nepal, Khandbari District / above Tashigaon, 3600 m 6.IV.1982, A. & Z. Smetana / Holotypus ♂ *Trisunius alesi* sp. n., det. V. Assing 2012" (cAss).

Etymology. This species is dedicated to Aleš Smetana, Ottawa, who collected the holotype. His generous offer to retain single males for future reference purposes is much appreciated.

Description. Body length 3.8 mm; length of forebody 2.0 mm. Habitus as in Fig. 5. Coloration: body uniformly reddish.

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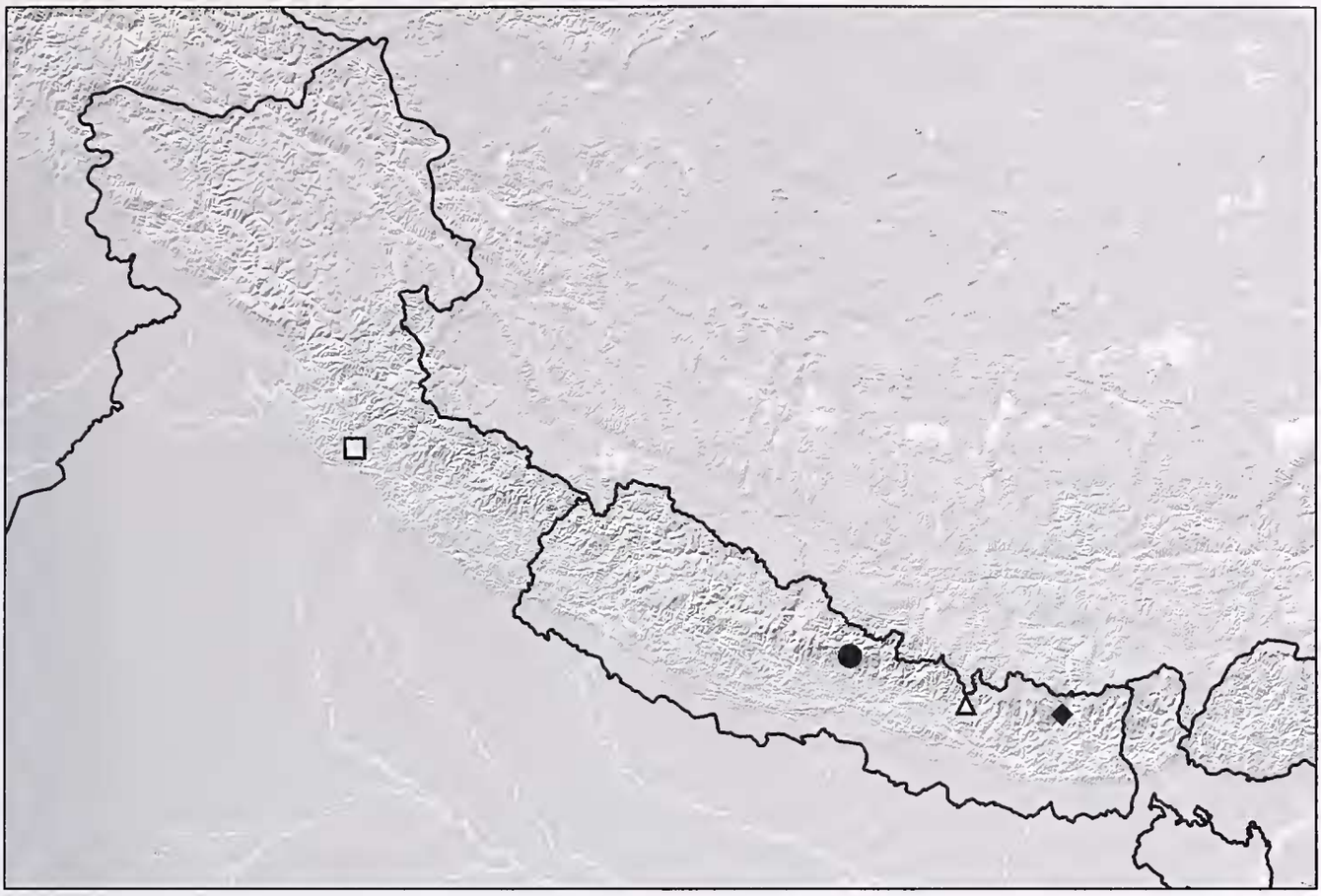

Fig. 21. Distribution of *Trisunius* in the Himalaya: *T. monticola* (square); *T. manasluensis* and *T. opaciceps* (circle); *T. perpusillus* (triangle); *T. alesi* (diamond).

Head (Fig. 6) weakly oblong, approximately 1.05 times as long as broad; punctation dense and fine; interstices with microreticulation and almost matt. Anterior margin of labrum with two tooth-like projections on either side of the U-shaped median incision. Eyes not projecting from lateral contours of head, barely one third as long as postocular region in dorsal view, composed of approximately 15 ommatidia.

Pronotum 1.1 times as long as broad and approximately 0.9 times as broad as head; punctation and microsculpture similar to that of head; midline with narrow shiny band reaching neither anterior nor posterior margins (Fig. 6).

Elytra short, approximately 0.75 times as long as pronotum, dilated posteriorly (Fig. 6); humeral angles weakly marked; punctation fine and dense; interstices without distinct microsculpture. Hind wings completely reduced.

Abdomen distinctly broader than elytra; punctation very fine and dense; interstices with microsculpture; posterior margin of tergite VII with narrow palisade fringe.

♂: protarsomeres I–IV moderately dilated; sternite VII moderately transverse, in posterior half with extensive median impression, this impression furnished with two rather extensive clusters of dense dark setae, posterior margin bisinuate, weakly concave in the middle (Fig. 7); sternite VIII weakly transverse, posteriorly with median impression without modified pubescence, posterior excision relatively deep and almost V-shaped (Fig. 8); aedeagus 0.53 mm long, with relatively shout ventral process (Figs 9–10).

♀: unknown.

Comparative notes. *Trisunius alesi* is distinguished from other Himalayan congeners particularly by its larger size, the uniformly reddish coloration of the body, the small eyes, and by the male sexual characters.

Distribution and natural history. The type locality is situated near Tashigaon [27°36'N, 87°15'E] in Khandbari district, northeastern Nepal (Fig. 21). The holotype was collected at an altitude of 3600 m.

Trisunius manasluensis sp. n. (Figs 11–15, 21)

Type material. Holotype ♂: "Nepal, Manaslu Mts., 28°22'N, 84°29'E, E slope of Ngali Khola Vall., 2000–2300 m, leg. Schmidt, 15.V.2005 / Holotypus ♂ *Trisunius manasluensis* sp. n., det. V. Assing 2012" (NME).

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Etymology. The specific epithet is a latinized adjective derived from the name of the mountain range where this species was discovered.

Description. Body length 3.3 mm; length of forebody 1.7 mm. Habitus as in Fig. 11. Coloration: forebody dark-reddish; abdomen dark-brown; legs and antennae reddish.

Head 1.05 times as long as broad; dorsal surface with very dense microreticulation, with subdued shine; punctation dense and shallow. Anterior margin of labrum with two tooth-like projections on either side of the U-shaped median incision. Eyes not projecting from lateral contours of head, less than half as long as postocular region in dorsal view, composed of approximately 30–40 ommatidia.

Pronotum approximately 1.1 times as long as broad and 0.95 times as broad as head; punctation fine, dense, and shallow; microsculpture weakly pronounced, dorsal surface therefore more shiny than head; midline without impunctate band.

Elytra short, 0.8 times as long as pronotum, lateral margins diverging posteriad in dorsal view; humeral angles weakly marked; punctation dense and shallow; interstices without distinct microsculpture. Hind wings completely reduced.

Abdomen somewhat broader than elytra; punctation very fine, dense on anterior tergites, somwhat sparser on posterior tergites; interstices with shallow microsculpture; posterior margin of tergite VII without palisade fringe.

♂: protarsomeres I–IV weakly dilated; sternite VII strongly transverse, posteriorly with shallow median impression, this impression with slightly stouter setae, posterior margin broadly and weakly concave (Fig. 12); sternite VIII moderately transverse, posterior excision almost V-shaped and not very deep (Fig. 13); aedeagus 0.45 mm long, ventral process slender and of distinctive shape (Figs 14–15).

Comparative notes. This species is characterised particularly by the reduced hind wings, the absence of a palisade fringe at the posterior margin of tergite VII, and by the distinctive shape of the aedeagus.

Etymology. The specific epithet is a latinized adjective derived from the name of the mountain range where this species was discovered.

Distribution and natural history. The type locality is situated in the Manaslu range in central Nepal (Fig. 21), where the holotype was found at an altitude of 2000–2300 m, together with the following species.

***Trisunius opaciceps* sp. n.** (Figs 16–21)

Type material. Holotype ♂: "Nepal, Manaslu Mts., 28°22'N, 84°29'E, E slope of Ngali Khola Vall., 2000–2300 m, leg. Schmidt, 15.V.2005 / Holotypus ♂ *Trisunius opaciceps* sp. n., det. V. Assing 2012" (NME). Paratype ♀: same data as holotype (cAss).

Etymology. The specific epithet is a noun in apposition and alludes to the dull head.

Description. Body length 2.8–3.0 mm; length of forebody 1.6–1.7 mm. Habitus as in Fig. 16. Coloration: head and pronotum dark-brown; elytra reddish-brown with paler posterior margins; abdomen blackish-brown; legs reddish-brown; antennae reddish.

Head approximately as broad as long or weakly oblong; dorsal surface with pronounced, very dense microreticulation, matt; punctation moderately dense and shallow, barely noticeable in the microsculpture. Anterior margin of labrum with two tooth-like projections on either side of the U-shaped median incision. Eyes weakly projecting from lateral contours of head, little more than half as long as postocular region in dorsal view, composed of approximately 40–50 ommatidia.

Pronotum approximately 1.1 times as long as broad and approximately 0.95 times as broad as head; punctation fine, dense, and shallow; microsculpture weakly pronounced, dorsal surface therefore much more shiny than head; impunctate band along midline indistinct or very narrow.

Elytra approximately as long and 1.10–1.15 times as wide pronotum, lateral margins subparallel in dorsal view; humeral angles marked; punctation fine and dense; interstices with indistinct microsculpture. Hind wings apparently present, but possibly of reduced length.

Abdomen approximately as broad as elytra; punctation very fine and dense; interstices with shallow microsculpture; posterior margin of tergite VII with palisade fringe.

♂: protarsomeres I–IV weakly dilated; sternite VII moderately transverse, posteriorly with shallow median impression, pubescence unmodified, posterior margin weakly concave in the middle (Fig. 17); sternite VIII weakly transverse, posteriorly with narrow median impression without pubescence in the middle, posterior excision relatively deep and V-shaped (Fig. 18); aedeagus small, 0.30 mm long, and apically bifid in ventral view (Figs 19–20).

Comparative notes. Based on the synapomorphically derived morphology of the aedeagus (small size, apically bifid), *T. opaciceps* is undoubtedly most closely related to *T. monticola*, from which it is distinguished by smaller size, smaller eyes, more pronounced microreticulation of the head, shorter elytra, and by the shape of the aedeagus (particularly in lateral view). For illustrations of *T. mon-*

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ticola see Assing (2011). For characters distinguishing *T. opaciceps* from other Himalayan congeners see the key at the end of the article.

Distribution and natural history. The type locality is identical to that of *T. manasluensis* and situated in the Manaslu range in central Nepal (Fig. 21) at an altitude of 2000–2300 m.

KEY TO SPECIES

In the key in Assing (2011), the species treated in the present paper would key out at couplet 3, together with *T. monticola*. In order to account for the additional species, the key is modified as follows:

3. Species from the Himalaya 3a
– Species from Yunnan, China 4

3a. Elytra at least approximately as long as pronotum. Eyes at least half as long as postocular region in dorsal view. ♂: sternite VIII with relatively deep, V-shaped posterior excision (Fig. 18); aedeagus conspicuously small, approximately 0.3 mm long, apically bifid in ventral view (Fig. 20) 3b
– Elytra distinctly shorter than pronotum. Eyes less than half as long as postocular region in dorsal view. ♂: sternite VIII mostly with less deep and broader posterior excision; aedeagus larger, distinctly longer than 0.3 mm, apically not bifid, and with slender ventral process 3c

3b. Elytra longer than pronotum (Assing 2011: Fig. 58). Eyes distinctly more than half as long as postocular region in dorsal view. Dorsal surface of head with shallower microsculpture, with subdued shine. ♂: aedeagus shaped as in Assing (2011: Figs 65–66). India: Uttaranchal (Fig. 21) ..... ***monticola*** (Cameron)
– Elytra approximately as long as pronotum (Fig. 16). Eyes slightly more than half as long as postocular region in dorsal view. Dorsal surface of head with pronounced microreticulation and matt. ♂: aedeagus shaped as in Figs 19–20. Central Nepal (Fig. 21) ..... ***opaciceps*** sp. n.

3c. Larger species; body length 3.8 mm; length of forebody approximately 2.0 mm. Eyes smaller, composed of only approximately 15 ommatidia, barely one third as long as postocular region in dorsal view. Pronotum with distinct microsculpture (Fig. 6). Abdominal tergite VII with narrow palisade fringe posteriorly. ♂: sternite VII with extensive median impression posteriorly, this impression with two clusters of dense dark setae (Fig. 7); sternite VIII with deep posterior excision (Fig. 8); aedeagus larger, 0.53 mm long, shaped as in Figs 9–10. Eastern Nepal: Khandbari district (Fig. 21) ..... ***alesi*** sp. n.
– Smaller species; body length 3.3 mm at most; length of forebody 1.7 mm at most. Eyes relatively larger, composed of at least approximately 30 ommatidia, nearly half as long as postocular region in dorsal view. Pronotum without, or with very shallow microsculpture (Fig. 1). Abdominal tergite VII without palisade fringe posteriorly. ♂: sternite VII of different shape and chaetotaxy; sternite VIII with less deep posterior excision; aedeagus 0.45 mm long at most and of different shape 3d

3d. Larger species; body length 3.3 mm; length of forebody 1.7 mm. ♂: sternite VII more strongly transverse and with somewhat stouter pubescence in posterior median impression (Fig. 12); sternite VIII with larger posterior excision (Fig. 13); aedeagus with ventral process of distinctive shape (Figs 14–15). Central Nepal: Manaslu (Fig. 21) ..... ***manasluensis*** sp. n.
– Smaller species; body length 2.8 mm; length of forebody 1.45 mm. ♂: sternite VII neither with distinct impression nor with modified pubescence (Fig. 2); sternite VIII with very small posterior excision (Fig. 3); aedeagus of different shape (Fig. 4). Nepal: Kalinchok (Fig. 21) ..... ***T. perpusillus*** (Coiffait)

Acknowledgements. I am indebted to the colleagues indicated in the material section for the loan of material under their care. Special thanks are due to Aleš Smetana (Ottawa) for the generous gift of the holotype of *T. alesi*. Benedikt Feldmann (Münster) proof-read the manuscript.

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